

DETAILED ACTION

Response to Arguments

Applicant's arguments, see the amendment, filed November 29th, 2007 (pages 13-14), with respect to claims 20, 40, 43, and 59-64 have been fully considered and are persuasive in that Butler does not suggest or disclose that the radiation source **and** the sensor array are fixed to the blade. The rejection of this claim has been withdrawn.

Examiner's Amendment

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with James Smith on February 28th, 2008.

The application has been amended as follows:

In regards to claim 7, line 2, "processing" has been changed to --processes--.

In regards to claim 21, line 8, "object" has been changed to --beam with respect to the array--.

In regards to claim 37, line 19, "angular orientations" has been changed to --twist--.

The amended claims appear below:

7. The apparatus of claim 1 wherein the processor further processing processes the responses of the sensors to determine bend of the object.

21. A method for determining changes in the shape of an object comprising:
emitting a cross-shaped cross-section beam from an electromagnetic radiation source coupled to the object,

determining angular orientation, representing twist of the object, of the cross-shaped cross-section beam with respect to an array of electromagnetic radiation sensors coupled to the object to receive radiation from the radiation source, using responses of the sensors; and

providing data indicative of the angular orientation of the ~~object~~ beam with respect to the array.

37. A method for determining changes in the shape of an object comprising emitting a first cross-shaped cross-section beam from a first electromagnetic radiation source coupled to the object,

determining twist of the object from an angular orientation of the first cross-shaped cross-section beam with respect to a first array of electromagnetic radiation sensors coupled to the object to receive radiation from the first radiation source, using responses of the sensors of the first array,

emitting a second cross-shaped cross-section beam from a second electromagnetic radiation source coupled to the object,

determining twist of the object from an angular orientation of the second cross-shaped cross-section beam with respect to a second array of electromagnetic radiation sensors coupled to the object to receive radiation from the second radiation source, using responses of the sensors of the second array;

the second radiation source being axially displaced along a length of the object with respect to the first radiation source and the second array of sensors being axially displaced along a length of the object with respect to the first array of sensors to provide a combined indication of changes in the shape of the object; and

providing data indicative of the angular orientation twist of the object.

Examiner's Reasons for Allowance

Claims 1-2, 4-19, 21-22, 24-39, 41-42, 44-58, and 65-68 are allowed over the prior art of record for the reasons set forth in the previous Office Actions (paper number 090205 and 0506).

Claims 20, 40, 43, and 59-64 are allowed over the prior art of record for the reasons set forth in amendment filed November 29th, 2007, on pages 13-14, and for the reasons set forth above.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kara E Geisel whose telephone number is **571 272 2416**. The examiner can normally be reached on Monday through Friday, 8am to 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr. can be reached on **571 272 2800 ext. 77**. The fax phone number for the organization where this application or proceeding is assigned is **571 273 8300**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

**/Kara E. Geisel/
Patent Examiner
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